

מטלת מנחה 14 - קורס 20277

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שאלה 1

סעיף א

המידע בהצגת XML ייראה כך:

```
<gallery>
  <name>galileo art</name>
  <location>
    <building>5</building>
    <floor>3</floor>
  </location>

  <exhibitions>
    <exhibition>
      <name>Planets</name>
      <subject>planets</subject>
      <curator>Daniella Perets</curator>

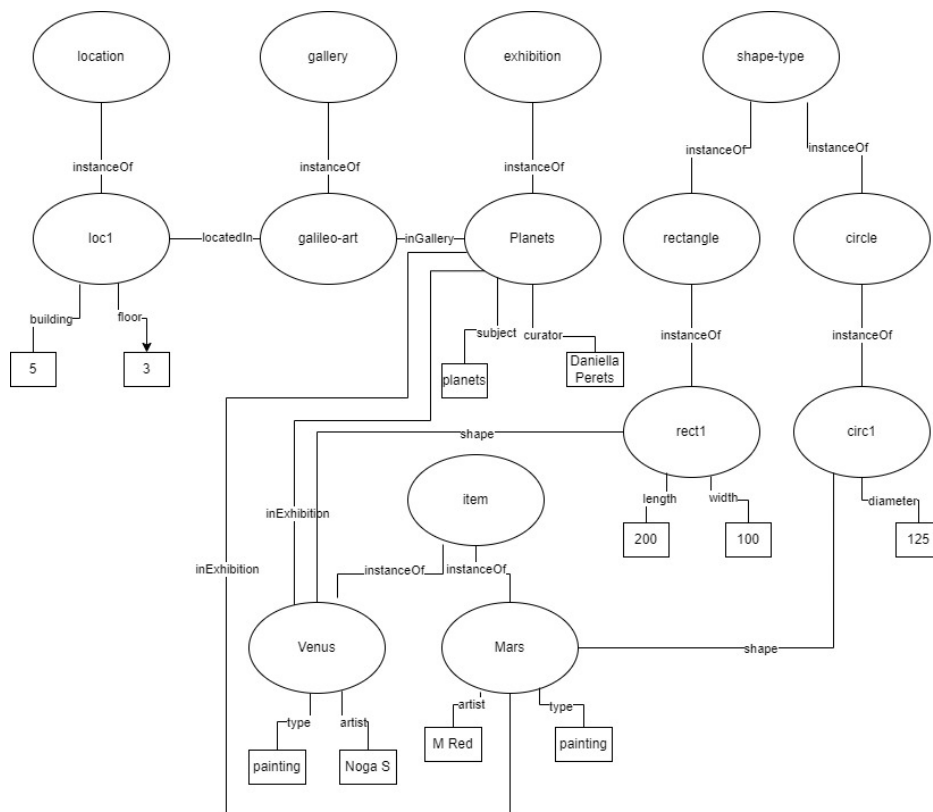
      <items>
        <item>
          <name>Venus</name>
          <artist>Noga S</artist>
          <type>painting</type>
          <shape>
            <rectangle>
              <length>200</length>
              <width>100</width>
            </rectangle>
          </shape>
        </item>
        <item>
          <name>Mars</name>
          <artist>M Red</artist>
          <type>painting</type>
          <shape>
            <circle>
              <diameter>125</diameter>
            </circle>
          </shape>
        </item>
      </items>
    </exhibition>
  </exhibitions>
</gallery>
```

סעיף ב

ובהצגת JSON כך:

```
{
  "gallery": {
    "name": "galileo art",
    "location": {
      "building": 5,
      "floor": 3
    },
    "exhibitions": [
      {
        "name": "Planets",
        "subject": "planets",
        "curator": "Daniella Perets",
        "items": [
          {
            "name": "Venus",
            "artist": "Noga S",
            "type": "painting",
            "shape": {
              "rectangle": {
                "length": 200,
                "width": 100
              }
            }
          },
          {
            "name": "Mars",
            "artist": "M Red",
            "type": "painting",
            "shape": {
              "circle": {
                "diameter": 125
              }
            }
          }
        ]
      }
    ]
  }
}
```

galileo-art instanceOf gallery
 galileo-art locatedIn loc1
 loc1 instanceOf location
 loc1 building "5"
 loc1 floor "3"
 Planets instanceOf exhibition
 Planets inGallery galileo-art
 Planets subject "planets"
 Planets curator "Daniella Perets"
 rectangle instanceOf shape-type
 circle instanceOf shape-type
 Venus instanceOf item
 Venus inExhibition Planets
 Venus artist "Noga S"
 Venus type "painting"
 Venus shape rect1
 rect1 instanceOf rectangle
 rect1 length "200"
 rect1 width "100"
 Mars instanceOf item
 Mars inExhibition Planets
 Mars artist "M Red"
 Mars type "painting"
 Mars shape circ1
 circ1 instanceOf circle
 circ1 diameter "125"



שאלה 2

סעיף א

נבצע את השאילתא הבאה:

```
select ?kno, ?pname
where {
    ?kno instanceof kneset
    ?kno kin ?rid
    ?pname pin ?rid
}
```

סעיף ב

נבצע:

```
select ?kno, ?pname
where {
    ?kno instanceof kneset
    ?kno kin ?rid
    ?pname pin ?rid
}
```

שאלה 3

על פי הנתונים:

$$n(d1, tables) = 35$$

$$TF(d1, tables) = \log(1 + \frac{35}{250}) = 0.057$$

$$IDF(tables) = 0.25$$

$$TF - IDF(d1, Q) = 0.057 * 0.25 + 0.025 * 0.167 = 0.018$$

$$n(d1, chairman) = 15$$

$$n(d1, chairman) = \log(1 + \frac{15}{250}) = 0.025$$

$$IDF(chairman) = 0.167$$

$$n(d2, tables) = 10$$

$$TF(d2, tables) = \log(1 + \frac{10}{250}) = 0.017$$

$$IDF(tables) = 0.25$$

$$TF - IDF(d2, Q) = 0.017 * 0.25 + 0.049 * 0.167 = 0.012$$

$$n(d2, chairman) = 30$$

$$n(d1, chairman) = \log(1 + \frac{30}{250}) = 0.049$$

$$IDF(chairman) = 0.167$$

והמסמך d1 ידורג גבוה יותר במדד הרלוונטיות.

שאלה 4

המטריצה T תיראה כך:

$$T = \begin{pmatrix} 0 & 0.5 & 1 \\ 1 & 0 & 0 \\ 0 & 0.5 & 0 \end{pmatrix}$$

אתחול: $P[1] \leftarrow 1/3, P[2] \leftarrow 1/3, P[3] \leftarrow 1/3$. באיטרציה הראשונה יתבצע:

$$P[1] \leftarrow 0.06 + 0.82 * (0.5 * 1/3 + 1 * 1/3) = 0.06 + 0.82 * 0.5 = 0.47$$

$$P[2] \leftarrow 0.06 + 0.82 * (1 * 1/3) = 0.333$$

$$P[3] \leftarrow 0.06 + 0.82 * (0.5 * 1/3) = 0.197$$

באיטרציה השנייה יתבצע:

$$P[1] \leftarrow 0.06 + 0.82 * (0.5 * 0.333 + 1 * 0.197) = 0.06 + 0.82 * 0.3635 = 0.358$$

$$P[2] \leftarrow 0.06 + 0.82 * (1 * 0.47) = 0.445$$

$$P[3] \leftarrow 0.06 + 0.82 * (0.5 * 0.333) = 0.197$$

הדף המדורג באופן הנמוך ביותר יהיה דף 3